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Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Unit 3 - Probability and Statistics Study Guide

### Probability

- chance of an event happening
- expressed as a fraction, in simplest form, or a percent
- ex: bag of marbles - 4 black, 3 red, 1 white
- $P(\text{black}) = \frac{4}{9} \rightarrow \text{black marbles}$   
 $9 \rightarrow \text{total \# of marbles}$

### MMMR - Best Measure of Central Tendency

- Mean - average
- Median - middle #
- Mode - most often
- Range - set of H's  $\rightarrow$  max-min
- Outlier - excessively higher or lower than the rest of the data
- use median when you have an outlier
- outlier pulls the mean higher or lower

### Mean - Missing Data

#### Steps

① equation

85, 73, 91, 88 want an average of 87

$$\frac{85 + 73 + 91 + 88 + \boxed{X}}{5} = 87$$

② add - all the data

$$\frac{337 + \boxed{X}}{5} = 87(5)$$

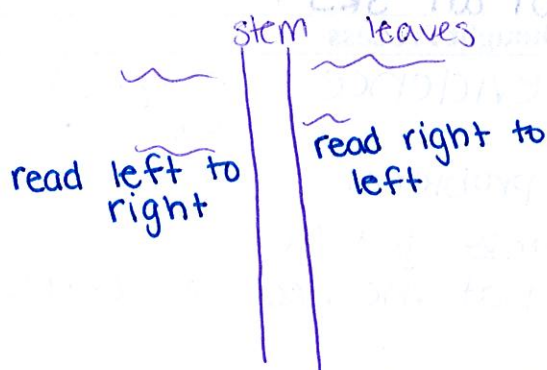
③ multiply - denominator by wanted average

$$337 + \boxed{X} = 435$$

④ subtract

$$- 337 \quad - 337 \quad \boxed{X = 98}$$

### Double Stem-and-leaf Plots



Key: ~ | ~

- \* stem is single digit
- leaves in order from least to greatest - no commas
- find range and median
- \* key!

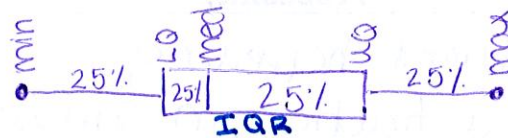


## Double Box-and-Whisker Plots

- above a number line - compares two sets of data, order numbers from least to greatest - find the median

5 number summary

min  
LQ  
med  
UQ  
max



\* exclude outlier from 5 number summary - plot as a \* 0

## Compound Probability (independent and dependent events, multiplying probabilities)

ind. events

- no impact
- with replacing
- multiply fractions

dep. events

- 1<sup>st</sup> event impacts the 2<sup>nd</sup> event
- without replacing
- multiply fraction - denominator is different (one less)

Bag with 3 green, 2 blue, 1 red marbles

P(two green)

$$\frac{3}{6} \cdot \frac{2}{5} = \frac{6}{30} = \boxed{\frac{1}{5}}$$

P(two green) with replacing

$$\frac{3}{6} \cdot \frac{3}{6} = \frac{9}{36} = \boxed{\frac{1}{4}}$$

## Simple Random Sample

\* used to draw conclusions about a population

Population - total # of people you have

Sample - # of people you survey, small group

SRS - how you pick names

- random
- equal opportunity to be chosen

- Hunger Games reaping is NOT an SRS

## Explaining your Thought Process

Why? statement → evidence

How?

- beginning - restate the problem
- middle - solution & how you got it
- end - why you chose that method & conclusion

\* use vocabulary

\* grammar & punctuation - complete sentences